THE UNIVERSITY OF MICHIGAN

Gas Journal

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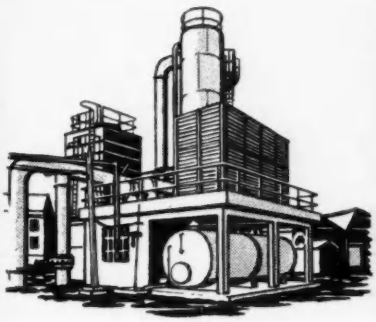

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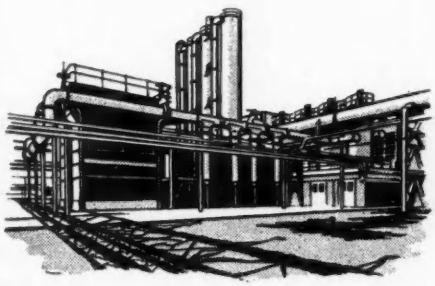
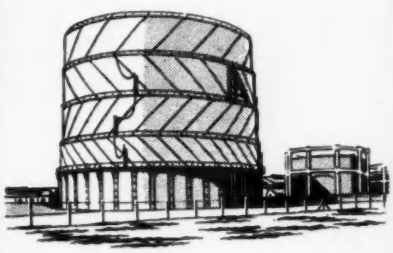


Plant

For the Gas Industry



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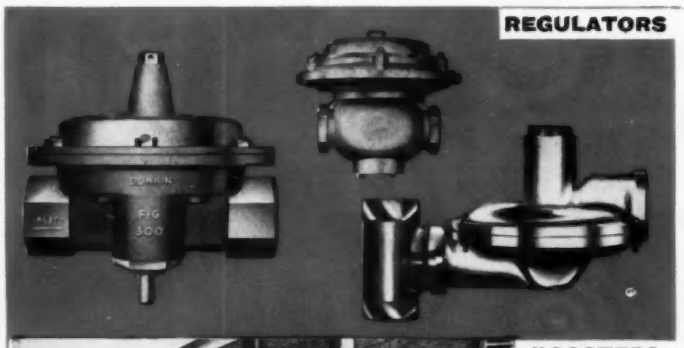

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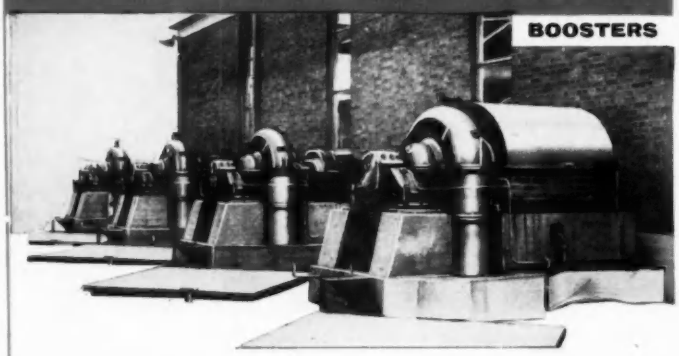

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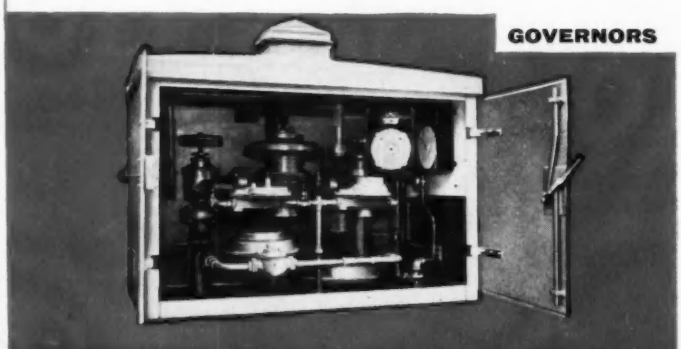

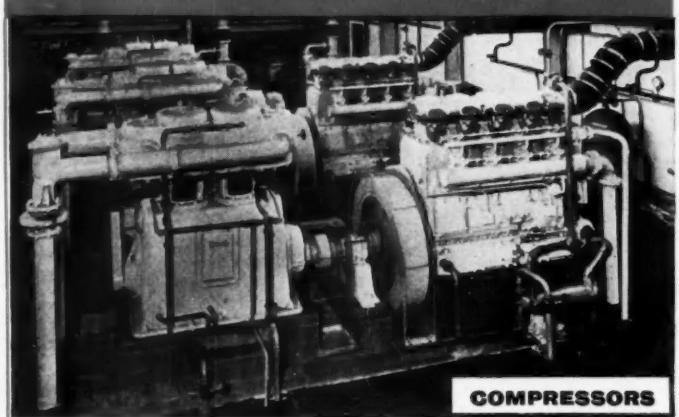

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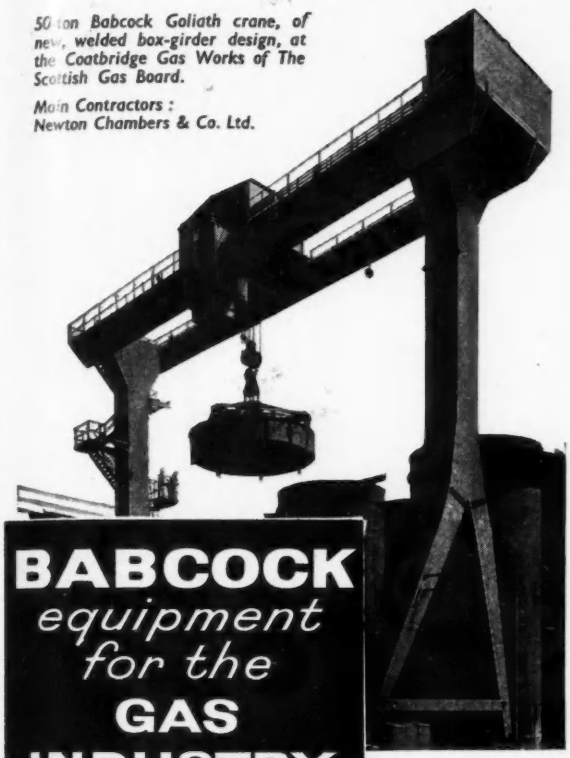

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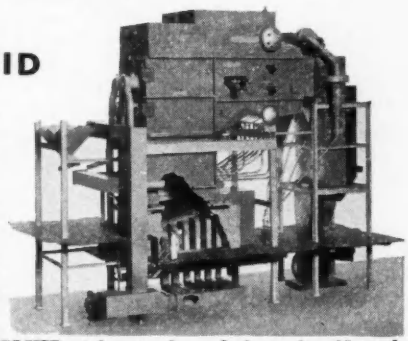

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Gas Journal

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WEDNESDAY DECEMBER 28, 1960

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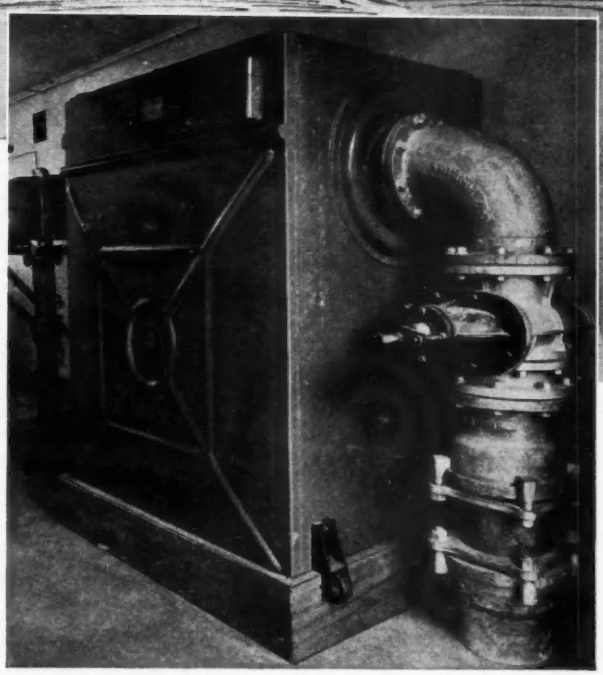

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Gas Journal

COKE OVENS • BY-PRODUCTS • CHEMICALS

Improving the image

THERE seems to be general agreement that the public image of gas needs a face-lift. Not only is gas associated with danger and smell—it is synonymous with the outdated and the archaic. Indeed, the gas image is so bad that its improvement should be a matter of top priority.

The factors contributing to this image are many and varied, and the matter can therefore be tackled by almost all sections of the industry. It would be wrong to suppose that this is only the responsibility of publicists and salesmen. Engineers can play perhaps the most important part of all—by producing a clean, non-toxic gas. It is wholly unrealistic to suggest that the extra penny or two a therm would price gas out of the market. By removing the offensive and dangerous properties of gas the industry would be freed from a burden which has become almost intolerable. Its image would immediately change for the better, and the opportunity thus afforded for publicity and sales drives would give the fuel a new lease of life. Price is not the only criterion. People are prepared to pay for what they want. At the moment all too few of them want gas. Clean, non-toxic gas, constant in quality and unfailing in supply, would be the biggest single factor in upgrading the image.

Other ways in which the image (we apologise for constantly repeating this overworked, but apparently indispensable, word) can be improved are immediately apparent if we consider some of the points at which the customer meets her gas board.

There are the contrived tools of advertising and publicity and what she reads in the free Press. There are her contacts with gas board personnel. There is the way in which the gas board writes or telephones to her, and charges her. There is the gas showroom and the impression it makes on her as a shop among many shops. There are the ways in which she sees gas appliances in use. There are the things she hears about gas from her friends.

No business organisation today can hope to hold its own in competitive life unless it takes publicity and public relations seriously. A gas board needs the services of a number of trained journalists to supply news, features, photographs and special articles to the Press, and maintain personal contact with editorial staff. You cannot control the Press, but you can help yourself by helping them. Give them the facts and you will usually get a fair deal; try to cover up and you can look out for trouble. The gas industry has an outsize chip on its shoulder with regard to Press coverage. The sooner it gets rid of it, the better.

Advertising is a subject in itself, and we often refer to it in these columns. Future policy might with advantage allow national advertising to place greater emphasis on glamorising gas as a fuel, leaving its application—i.e., the appliance angle—to the boards.

The relatively few gas people with whom the gas consumer comes in contact are, for her, the gas board. Take the meter reader. If he says gleefully that your bill is going to be higher this quarter, he is giving the impression that the gas board is greedily rejoicing in the fact. If on the other hand he says that he is sure you must have been glad of your room heater because he can see that you have made good use of it, the impression is very different.

Why do cashiers so often act as if they are dumb? Watch a housewife place cash on the counter to pay her bill. A hand pulls the account inwards, it is receipted and pushed back to the customer. Not a word is spoken in greeting or thanks—not a smile, just cold indifference. And is it really necessary to put these voiceless ones behind bars? Maybe that is what inhibits them.

Needless to say, a great deal depends on the courtesy, tact and skill of the salesmen and women in the showroom and on the salesmen on the district. But what about the fitters? The fitter *is* the gas board to the majority of customers. He is really a label attached to every appliance sold, because he follows every sale into the house. Such a man has it in his power to earn a great deal of goodwill for his board and also to sow the seeds for further sales. As such he should be given training in some aspects of customer relations. We would like to see the gas industry develop a mania for cleanliness—in its vehicles, its showrooms, and its staff. Today there are sweeps who wear white overalls as an advertisement for their vacuum cleaning equipment. The mechanics at garages wear white overalls. Why shouldn't gas fitters follow the example of these and the many others who take to white overalls? A

smart white-overalled figure boldly labelled 'Gas' going down the street would be noted by people who in time would think, 'How clean these gas board men look!' Clean men, clean fuel.

Let us have correspondence which employs clear, concise language—no commercialese, no 'standard' letters. In cases of delayed payments, a politely worded reminder may bring swifter results that the curt, strong-arm 'pay up or else' stuff. The Southern Gas Board has taken steps to train staff in good telephone manners. In addition to trained operators, all persons in the office who take over the calls should have some training in the correct procedure. There is nothing undignified about it; it is a technique which needs to be learned just as much as using a typewriter.

A potent form of publicity is the establishment of modern gas appliances in public places. More and more hotels are introducing electric fires into their bedrooms, usually because the gas fires were outdated and poorly maintained. Hotel lounges often have Magicoal fires. Gas room heaters would do the job just as well, probably better, but the management has to be persuaded of the fact; if the hotelier judges gas on the strength of the fires in his bedrooms and the way in which they are maintained, the gas board probably won't have much of a chance. This is a case where a good maintenance service pays dividends. And what about a free trial period? It would be worth it not so much because of the load it would eventually produce, but because of the publicity afforded by having a first-class heating appliance on public view. The arguments attached to hotels apply equally to pubs, domestic science centres, clubs—one could go on enumerating places in which efficient gas appliances can tell their silent sales story. The trouble seems to be the lack of proper machinery to keep the sales side informed of these opportunities.

Painless extraction

Public opinion of gas is not unconnected with the way in which gas boards charge. There is a belief that gas boards are inclined to be stingy. Monthly accounts, heat services included in the rent or some form of 'pay as you go' without the nuisance of coin meters, would help to correct this impression. Why only a £2 trade-in allowance when an electrical dealer will give a great deal more? Why such (apparently) high charges for fitting and servicing? We believe that free maintenance is an essential part of an appliance sales offer, and that the industry should do a great deal more to play up the 'fit and forget' angle. We live in an age of jiggery-pokery concerning repairs and maintenance—at the mercy of garages, dentists, watch and radio repairers. A reputation for real service would be worth a lot. And with so many women going out to work, perhaps that fitting and maintenance service should be available in the evenings.

It can cost as much to fix a multipoint as to supply and fit an immersion heater. This is damaging to the gas image. 'Little men' who do the job at half the price of the board are unpopular with service officers because they are sometimes unreliable—but the cure lies in the industry's own hands.

The industry's principal means of contact with the outside world are its showrooms. Outnumbered about 12 to 1 by electricity (including electrical dealers), the thin red line of the gas showrooms needs some special qualities if it is to hold its own. Because there is prejudice against gas and a belief among many people that it is old-fashioned, gas showrooms should be among the most modern shops to be seen, with really aggressive point-of-sales displays. Spending money on showrooms is investing in success.

First aid for showrooms

In this nationalised industry we have inherited many kinds of showrooms. Some were pretty good, but there were many big marble and mahogany mausoleums; glum, gravy-brown shops that look as though they ought to sell elastic-sided boots and American cloth; and little showrooms attached to the gasworks, like a parlour window in which one expects to see an aspidistra and a china alsatian. Turning this motley collection into an effective chain of ultra-modern retail outlets is a big and very expensive job. Even so it would cost only a fraction of what is being spent on modernising gas production to refashion and refurbish our showrooms. It all goes to show that even if the sales side is not the Cinderella it once was, it is still by no means the belle of the ball.

There are other aspects of this imagine business which should not be forgotten. What is the image of gas held by architects, builders, plumbers, heating engineers and dealers? Do we encourage them to regard the gas board as a fair-dealing, lively, co-operative, progressive organisation, more than a match for the hidden persuaders of oil and electricity? We have heard some alarming stories of dealers who thought the gas board was a naïve, green new entrant in the trading field, one which was there to be milked; and of the gas board which disastrously under-estimated the cash value of an 'introduction' which would have meant gas central heating in an estate of a hundred houses.

And then there is the image of gas held by the industrialist and the caterer. Do they regard the gas board as a body who can, if necessary, merely link them up to their fuel, or do they regard the board as an expert adviser who understands all the problems involved?

What about the image of coke? To what extent do we want to improve it, possibly at the expense of the image of gas? Already there seems to be widespread recognition of the fact that the sooner we get away from the name 'coke,' the better, and there is a variety of new terms being coined.

So one could go on. There are a thousand facets to the public opinion of gas. The important point is that a very large number of these contributory impressions are to some extent within the power of people in all sections of the industry to change and improve. We must get over to the public that gas is an exciting industry (which it certainly is), that it is as modern as tomorrow, and that it offers the finest cooking and heating service available today. If the gas industry declines it will not be because of the product but because of ourselves.

CORROSION COSTS U.K. £600 MILL. A YEAR

Exhibition shows gas industry aids in the 'fight-back'

Flame cleaning equipment by British Oxygen Gases Ltd. in use on a gasholder.

CORROSION, which is estimated to cost the United Kingdom alone something like £600 mill. in a year, has long been recognised for the menace it is by the gas engineer. Materials and equipment for fighting corrosion were shown at the Corrosion and Metal Finishing Exhibition, organised at Olympia from November 29-December 2 by the journal *Corrosion Technology*. **Among the items of particular interest to the gas industry were anti-corrosive paints, rubbers, paint application equipment, cathodic protection and corrosion testing equipment.**

Among the firms showing a comprehensive range of surface coatings was the **Donald Macpherson Group of Companies,** whose products have achieved wide success in many fields, including the gas industry.

Particularly notable are this Company's range of 'Foochow' Epimac finishes, based on epoxy resins, which provide protection against many corrosive influences, including sulphuric acid, ammonia vapour and caustic soda.

Of these finishes, Epimac 702 is claimed to be the most chemically resistant and impermeable air-drying finish at present available.

Plant which has recently been successfully treated with this finish includes a British gasworks benzol plant.

Another well-known manufacturer of protective coatings of all kinds is the firm of **British Paints Ltd.,** whose exhibits included examples of a new meter enamel.

Protective finishes of many different kinds are manufactured by **Detel Products Ltd.,** including Detel E/P paint, which is one of the Company's more recent products and is now beginning to find an increasing number of applications in industry, especially where abrasive action and acid conditions are experienced.

This product provides a thick, tough coating which gives ideal protection where abrasive dust conditions are experienced as, for example, in coke oven plants.

One of the gas boards has made considerable use of this coating material in one of its works. E/P paint has also been used in a hot coke quenching plant where sulphuric acid is present in vapour form.

Griffiths Bros. Ltd. have developed a range of modern protective systems for all types of plant, equipment and structures, including a system based on polyurethane resins.

Applications include the exterior surfaces of gasholders, where leakage can cause the destruction of conventional paint finishes.

Among the properties of these coatings are abrasion resistance and hardness equal to that of vitreous enamel, outstanding durability when exposed to oils and solvents, and complete hardening at low temperatures.

New techniques was the theme of the **Griffiths Bros. Ltd.** stand and, in addition to polyurethane treatments, the stand showed examples of new Melanoid bituminous coatings and the well-known Ferrordor system, specially designed for use on ferrous structures sheathed in non-ferrous metals.

New techniques for the formulation of specially solvent and chemical resistant coatings for tank linings were also shown.

In many stands it was emphasised that, generally speaking, anti-corrosive coatings should not be purchased 'off the shelf' by the customer but should be discussed carefully with the manufacturer, in the light of the particular problem concerned.

In some cases, due to the particular nature of a corrosion problem, it may be necessary to produce a 'tailor-made' coating to meet a special problem.

Sometimes it is more appropriate to apply the protective coating in a special manner, either in the supplying company's own works or on site using the company's specialist staff.

One of the companies which operates a comprehensive design, supply and installation service is **BTR Industries Ltd.,** which showed examples of linings and coverings of soft and hard natural and synthetic rubbers and other materials.

The most recent product on show was a new corrosion-resistant sprayed PVC coating, which can be used on structural steelwork and plant as well as for the protection of concrete, brickwork, iron

and non-ferrous metals, as found in many gas installations.

Known as Synco PVC, this coating is sprayed on by the Company's staff, either in their own workshops or direct on the construction site.

Loyne Ltd., the coating specialists of Ashton-under-Lyne, and **West's Group of Industries, Ltd.**, Manchester, have both been known for a long time in the gas industry and one of the most interesting developments reported at this year's Corrosion and Metal Finishing Exhibition was the announcement of the recent formation of a new Company, jointly formed by these two long-established concerns as **West's-Loyne Ltd.**

Heavy equipment

The new Company, which is at Miles Platting, Manchester, adjacent to the principal works of the West's Group, will offer a service to industry comprising a comprehensive range of anti-corrosive and protective coatings to heavy equipment up to 5 tons in weight.

Purpose-built plant, including the most up-to-date preparation and coating equipment, has been installed at the new works which includes a new fully-automatic shot-blasting cabinet, one of the largest of its kind installed in Britain for this type of work, a high-capacity gas-fired oven for sintering and stoving of coatings as well as much other ancillary plant.

Examples of the work carried out by the new Company were on show on the stand at Olympia and it is anticipated that the firm will find a great deal of work in the gas industry as do the parent Companies.

One of the most important factors determining the type of anti-corrosive treatment required for any underground installation, particularly pipework, is the nature of the soil.

It is now increasingly recognised that a study of the soil is essential before laying new pipes and the new science of soil mechanics is called in to assist.

Anyone who took the trouble to visit the stand of **Soil Mechanics Ltd.**, one of the Companies of the **John Mowlem Group,** soon discovered how much this comparatively new science has to offer the distribution engineer in particular.

Although this particular Company normally undertakes corrosion surveys as part of site exploration for civil engineering contracts, the same facilities are available when the work in question relates to the laying of pipelines.

A corrosion survey will comprise an appraisal of the geology, rock structure, drainage and any other local conditions while field and laboratory tests undertaken include soil resistivity measurement, corrosion probing and the likely action of soil and ground water towards steel and other materials.

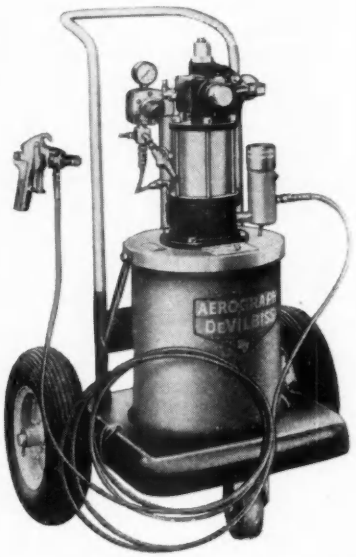
For pipelines

Cathodic protection is applied to many thousands of miles of pipeline in this country and, indeed, it was claimed at the Exhibition that between 70 and 75% of all gas mains are protected in this way.

One of the leading cathodic protection organisations in the United Kingdom is **Metal & Pipeline Endurance Ltd.**, (MAPEL) which reports that it is carrying out work for most of the United Kingdom gas boards at the present time.

In addition to showing examples of its work in the form of photographs and a model of a cathodically protected jetty, MAPEL also gave a first showing to two important new pieces of equipment for use in connection with the prevention of corrosion.

One of these was a new holiday detector, shown in prototype form for the first time. A feature of this detector, which is just coming into production, is that it can be used under damp conditions and even when the pipe coating is saturated with water.



New airless spray painting unit introduced by Aerograph-DeVilbiss Ltd. This equipment will effect complete atomization of even the heaviest materials.

Electronic circuit

A special electronic circuit avoids any loss of current along the wetted pipe surface so that the full voltage is available for testing.

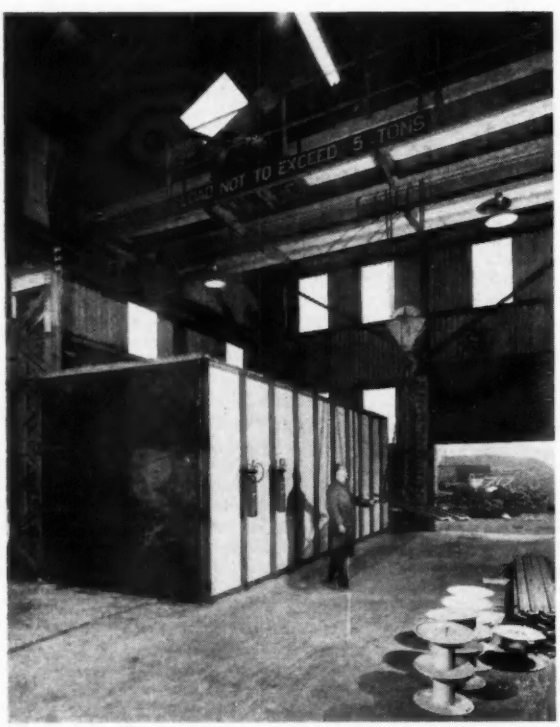
On detection of a 'holiday', both visual and audible warning is given and the probe can be of either the spring-electrode or brush type.

MAPEL also showed a new type of corrosion meter which is at present undergoing stringent tests under field conditions.

Another method of protecting underground pipes is by wrapping them with suitable wrapping materials, such as the well-known Denso range of anti-corrosion products manufactured by **Winn & Coales Ltd.**

These tapes are particularly widely employed for the wrapping of joints and other parts of pipe systems which cannot be completely protected by such other means as bituminous coatings.

The products available from Winn &



Exterior view of gas-fired oven at West's-Loyne Ltd., Ashton-under-Lyne, for sintering and stoving of protective coatings. West's-Loyne Ltd. is a new company jointly formed by the West's Group of Industries and Loyne Ltd. It is expected to find many openings in the gas industry.

Coales Ltd. are backed by a comprehensive laboratory service (described in a previous article in 'GAS JOURNAL') and the Company has comparatively recently introduced a contracting department, making available to clients an advisory and labour force for the practical application of the firm's tapes to pipelines and other installations.

One of the most recent developments of Winn & Coales Ltd. is the new Densopol tape (Grade ZN), which gives protection to buried pipelines and fittings where a flexible wrapping of high electrical resistance is required as, for instance, where stray electric currents are suspected or where the metal is cathodically protected.

The coating incorporated in this wrap is a neutral compound consisting of a dispersion in saturated petroleum hydrocarbons of inert siliceous fillers and special corrosion inhibitors.

Synthetic yarn

The fabric employed is an open-weave cloth made from synthetic fibre spun yarn and the backing is of high density polyethylene .0015 in. thick.

Another firm in the anti-corrosive pipe-wrapping field is **John Gosheron Ltd.**, whose range includes the Polyvil P.P. heavy-duty PVC tape and Vylap heavy-duty self-bonding PVC tape.

This Company is reported to be about to introduce a new product, a polythene corrosion control tape.

Another interesting recent development from John Gosheron Ltd., is the Transoprint pipeline identification tape. These will carry printed words describing the contents of a particular pipeline or, for that matter, any other information the engineer may wish to be attached to the pipe as a permanent record.

In addition to the materials used to provide protection against corrosion, the Exhibition also contained examples of the various types of equipment employed in protective services.

Surface preparation

One of the most important aspects of all coating application is the proper preparation of the surface before the coating is applied. Oxy-acetylene flame cleaning is one of the best-known and certainly one of the most effective methods of cleaning a metal surface such as that of a gas holder.

The British Oxygen Co. Ltd. demonstrated their Saffire flame cleaning blowpipe and showed the advantages of flame cleaned surfaces as compared with those cleaned by other methods.

Equipment for spraying anti-corrosive coatings was shown by the **Aerograph-DeVilbiss Co. Ltd.** whose exhibit included the new airless spray painting unit which eliminates fog from spraying.

By means of this equipment, objects and items of plant which cannot be moved to a spray booth can be spray painted *in situ* without the risk of affecting nearby objects or inconveniencing other workers.

The Aerograph-DeVilbiss Co. Ltd. also showed for the first time in this country a machine for applying urethane foam by spray techniques.

The operator is able to control the thickness of the foam which is formed by the chemical action of the material as it leaves the spray gun.

There remains the use of anti-corrosive materials, as opposed to the protection of materials prone to corrosion.

This is perhaps an angle which has not yet been fully explored by gas engineers, largely because the economics of many of the new materials in particular applications have not been examined but also because the interaction between the materials and the gas they are required to carry is not completely understood.

An interesting exhibit on the stand of **Semtex Ltd.** (a Dunlop Company) was the use of glass linings for coal bunkers, which, it is claimed, considerably reduces maintenance costs and improve the flow of the product.

The glass lining gives complete protection of the main structure against corrosion and wear while the reduced coefficient of friction also reduces 'hang-up' of fine coal on the sides of bunkers.

On the main **Dunlop Co. Ltd.** stand was seen a new industrial anti-corrosive lining consisting of a composite laminate or polythene or polypropylene on rubber which for the first time enables synthetic plastics to be applied direct to metal for tank linings.

Examples of many varied components in glass fibre reinforced plastics were displayed on the stand of **A. E. Griffiths (Smethwick) Ltd.**, including a corrosion-resistant centrifugal fan with the impeller and housing in glass reinforced polyester resin. This Company manufactures a wide range of ducting, fans, canopies, scrubbers and the like which have many obvious applications in the gas industry.

Cannon (CP) Ltd. are well-known for their cast iron and steel equipment, lined with glass enamel and many examples of mixing pans, pipes and connections were among the equipment shown on the stand.

This Company supplies equipment suitable for high duty applications where strong corrosive attack has to be resisted and, in addition, to supplying the equipment, Cannon (CP) Ltd. also re-enamel existing equipment.

Technical meetings, sponsored by the Plastics Institute and the Corrosion Group of the Society of Chemical Industry, were held in connection with the Exhibition.

LETTER TO THE EDITOR

The case *for* Carbon Monoxide

DEAR SIR,

The authors of 'The Next Twenty-five Years' have queried the advisability of reducing the percentage of carbon monoxide in town gas but it appears that no support for this view was forthcoming at the meeting. In fact, in the published discussion four out of five contributors spoke strongly against carbon monoxide.

A desire to reduce carbon monoxide is understandable but I feel that the authors have good cause for questioning the wisdom and the economics of excessive zeal in this direction. The case *for* carbon monoxide has never been properly argued and the following notes are offered in order to stimulate thought on this important topic.

Gas is not meant to be inhaled, any more than electricity is meant to be earthed through the human body, or to cause fires by short circuiting, but is electricity transmission kept within the bounds of really safe low voltages? That would, I think, be regarded as impossible economically. Again, comparing with travel risks; is the speed of road transport limited to 10 m.p.h., or are walls built along all the kerb sides to increase the safety of road and pedestrian traffic?

One could multiply such illustrations where calculated risks are taken for practical and economic reasons. A balanced view is equally necessary in respect of gas supply. The cost of producing, distributing, and selling town gas is already at such a level, that we should avoid, and not too readily accept, further burdens unless it is clear that the result will be an increase in gas sales, not just a reduced rate of decrease.

It would be difficult to argue a case for the exclusion of carbon monoxide from town gas from the point of view of its value as a fuel, but on the other hand, it would not be difficult to argue a case for the exclusion of hydrogen, which is the cause of much troublesome condensation from combustion products. It also reduces efficiency in use through loss of heat in the water of combustion amounting to some 50 B.t.u. per cu.ft. The results of these two faults of hydrogen are to increase the cost per 'useful therm' and the costs of installation and maintenance. Condensation is one of the reasons, along with sulphur, why more flueless heaters are not sold. If carbon monoxide is reduced will we be handicapped with more hydrogen?

Considering the years that have passed while lip service has been given to the slogan 'Sulphur Must Go', I am relatively happy in the prospects of survival for carbon monoxide. But, if the 'oversensitives' prevail, then the resources of the new gas industry could be applied to wipe out this most valuable constituent. Then I should not be so happy about the future of gas.

I enclose my card and sign myself:—

'M.INST.GAS E.'

Swamp, snakes . . . but Florida gas main goes through

Probably the biggest challenge in laying the pipeline to Florida came when the pipe had to be laid through swamp land. To do this, special techniques were required like in this scene where a six-joint length of concrete-coated pipe, weighing nearly 32 tons, was carried out as far as the tractors could travel and then pushed forward through the swamp.

LAYING 2,600 miles of gas mains around the hurricane-swept coastlines of Texas, Louisiana, Mississippi, Alabama and Florida is a construction challenge to any contractor laying pipelines.

However, when you lay gas main through the Louisiana bayou country with its alligators, on through the Dixieland forests, and then have to push through the snake-infested, quicksand-like terrain of the Florida swamp lands—then, you really do have a headache.

Here every man had to wear metal clad leggings to protect him from the almost continuous attack of poisonous snakes. Here the trench digging machines could not dig trenches fast enough to enable workmen to drop in the pipe.

The swamp ooze completely filled in the trench 30 ft. behind the fast-moving trenching machines; conventional methods of laying a pipeline had to be forgotten.

The contractor welded five to six lengths of pipe together, cleaned, wrapped and covered it with cement and plugged the front end.

This welded section of covered pipe would be plucked up by a team of three huge crawler type tractors, rushed into the swamp as far as they could go, and then dropped in line with the pipeline.

In the meantime the veteran pipeline welding teams would be welding and

wrapping another six-pipe section, this the three tractor team would pick up and race out to the trailing end of the lead section.

These sections weighed over 32-tons each.

The two sections were welded together, then the entire length was pushed forward into the swamp. After all the sections had been welded they were pushed forward to the extremity of the swamp area.

Here a pair of powerful crawler-type tractors would enter the swamp edge to retrieve the weaving pipe main, winch it from the depths of the mud and swamp ooze, line it up with the engineers' plans, and then proceed back into conventional pipe laying. Some of these swamp pushes were extended for a distance of 7,000 ft.

All through the state of Florida, crews had to race to get the pipe into the ground and covered before the smelly, sulphur-laden water filled the trench.

This is the largest pipeline undertaking in the free world today, and although the main transmission line of 1,517 miles has been completed and gas was piped into Florida for the first time in June, it will take several years to complete the remaining 1,100 miles of distribution systems through the three Southern states.

This main will be connected to the existing main in the State of Louisiana, which will also feed gas from her resources into the main to help boost the gas flowing from Texas wells.

The pipeline cost over $161 mill., and is owned by the Houston Corporation, of St. Petersburg, Florida. At present the main as supplied from Texas is delivering 282 mill. cu.ft. of gas daily to Florida.

When the remaining 1,100 miles of distribution systems have been completed the daily gas supply from Texas and Louisiana will be over 411 mill. cu.ft. of gas into the State.

It is interesting to note that the one pipe cleaning and covering machine applied over 115,200 ft., or almost 22 miles, of protective wrapping for each two miles of pipelaying progress. When the entire contract has been completed, it will have used approximately 155.520 mill. ft., or 29,460 miles of wrapping material.

Part of the pipelaying contract ran along the right-of-way of Florida's Sunshine State Parkway, and became an added attraction to tourists, though few who watched realised how much the parts they did not see running through swamps of Florida, the Louisiana bayou, and Dixieland forests, had taxed the imagination and skill of the engineers in order to meet the challenge.

Veteran pipeline welders work fast (above) to put a 'bead' around two sections of the 1,517-mile main transmission line that brought Florida its first natural gas. With good conditions, men and machines laid in pipe at the rate of at least two miles a day. The map (below) shows the route of the full 2,600-mile pipeline system being installed by the Houston Corporation of St. Petersburg, Florida, of which the transmission line is part.

After reconstruction—

SOUTH EASTERN BOARD'S CENTRAL LABORATORIES ARE REOPENED

SPEAKING at the inauguration ceremony of the newly reconstructed central laboratories of the South Eastern Gas Board in the Old Kent Road recently, Mr. W. K. Hutchison, Deputy Chairman of the Gas Council and formerly Chairman of the Board, recalled how much and how often he had been in debt to the central laboratories since the Board's inception, and especially during the early days of nationalisation, when 60 separate undertakings of varying size were being welded into a single entity of management.

The services made available by the laboratories as they then were, had been of the utmost assistance to these undertakings and it had been most gratifying to see how gladly help had been given and accepted during that time of transition.

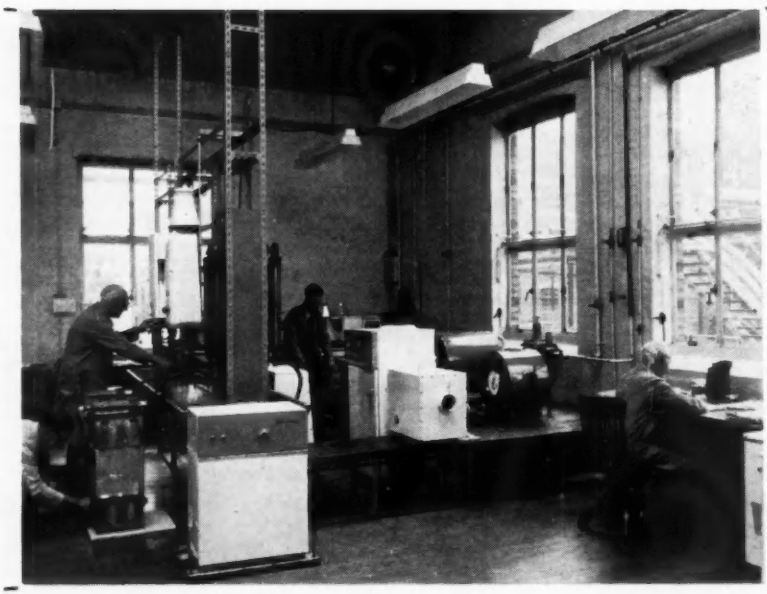
In a tour of inspection after the inauguration, one was most impressed by the multiplicity of work being carried out and the excellent accommodation made possible by the reconstruction. The decision to rebuild the old existing laboratories on the original site had been forced on the Board by circumstances outside its control, but there can be little doubt that great skill has been shown in designing the new buildings within the somewhat circumscribed limits imposed upon it.

The Old Kent Road laboratories had their origin in the early years of this century when Dr. Charles Carpenter, Chairman of the South Metropolitan Gas Company decided to ensure that gas consumers in South London received a gas of high and unvarying quality to be used in appliances of efficient performance made to precision engineering standards. This precluded the seasonal use of water gas which was regarded with disfavour also on account of its toxicity. Naphthalene was in those days, a serious nuisance on the district. Its elimination from the finished gas and the reduction of organic sulphur to less than 10 grains per 100 cu.ft. by catalytic heat treatment were the first two triumphs of Dr. Carpenter and his young assistant E. V. Evans, who in 1912 was appointed chief chemist to take charge of the central laboratories then being set up.

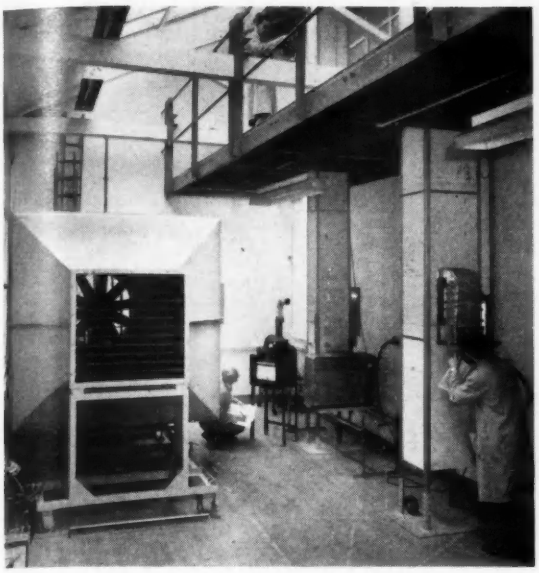
The 1914-1918 war made heavy demands on the chief chemist and his staff in the development and operation of processes and plant for the production of synthetic phenol and other badly needed chemicals for munitions. The application of gas for industrial purposes was also developed. At the end of the war the chemical laboratory, concerned with gas production and products, and the physical laboratory, dealing with gas appliances and gas utilisation, existed side by side.

The coming of the Gas Regulation Act, 1920, and the thermal basis of charge brought new problems in the accurate measurement of calorific value, and out of this grew the instrument section. By 1925 the need for improvement in coke quality to open up the domestic market for this product became a concern of the chemical laboratory. A few years later demands for improved road surfacing to meet rapidly increasing traffic loads focussed attention on the properties of tar and the road surfacing materials derived from it.

TESTING WATER HEATERS



The water heating laboratory of the South Eastern Gas Board in the Old Kent Road, London.



In the Flues laboratory, with SE-Duct appliances under test.

Thus the scope of work grew and eventually resulted in the central laboratories as they are today. Their primary function is the provision of technical and scientific service to the other departments of the Board, particularly those of the Chief Engineer, the Commercial Manager, the Coke Manager and the Chemical Products Manager. For this purpose close liaison is maintained not only by direct contact of the officials concerned but also through appropriate committees.

The performance of this function involves routine testing and analysis and many *ad hoc* investigations into specific problems. In addition research and investigational work of a more general character is carried out in the furtherance of the policies of the Board, or because of some special need of the engineering or commercial departments. Where the problems and development are of national as well as local importance, the work is usually submitted to the Gas Council Research Committee for inclusion in its programme. Close contact is maintained with the laboratories of the Gas Council and with other kindred research organisations. Staff of the central laboratories take part in the committee work of many of these bodies.

Scientific library

There are a number of closely co-ordinated sections each dealing with one or two groups of problems, and housed in a separate laboratory. The laboratory staff are supported by a scientific library, a drawing office, stores, and the normal administrative organisation. The library has approximately 1,000 text books and standard works, and bound volumes of the more important technical journals; a wide range of current technical journals are circulated to the staff, which numbers about 100 including 80 scientific and technical members of which 20 are graduates.

The layout of the present premises consists of east and west buildings joined by the entrance hall, and a separate north building. The entrance hall includes a small conference room. On the ground floor of the west building are the appliance laboratories, the refractories laboratory and the instrument laboratory. On the first floor of the east building the analytical and general chemical laboratory and the process development laboratory occupy the southern portion and the remainder is taken up by the drawing office, library, records room and the administrative offices. The ground floor is not occupied by the laboratory but in the semi-basement are the tar laboratory, the photographic darkroom and the departmental stores. The northern building is occupied by the space heating and coke laboratories and the industrial gas laboratory. The total area occupied by the department is 29,000 sq.ft. of which the laboratories proper cover 17,000 sq.ft.

What they do

In the analytical and general chemical laboratory the routine analysis of bought-in materials is carried out for the Board's stores department, so also is the development and use of special analytical techniques and the investigation of general chemical problems arising from the works and from the district. In the process development laboratory, new or improved methods for the production and purification of gas are investigated and help is provided to the Board's production works in the solution of chemical engineering problems. The instrument laboratory is responsible for the servicing of measuring and recording instruments throughout most of the Board's organisation, including the production works and the distribution system. Where an adequate service is not available from manufacturers repairs to these instruments are carried out by the laboratory staff. The laboratory also plays an important part in the design of the instrumentation and control systems for new works and plant.

The utilisation of gas forms an important part of the work at Old Kent Road. The work includes the testing and examination of appliances in conjunction with the Watson House Centre, the investigation of district difficulties and the development of new appliances and equipment. The appliance laboratories therefore provide a channel for the receipt of technical information from Watson House and other centres and its dissemination among the Board's district staff. Separate sections deal with (a) domestic cooking and catering, (b) water heating, laundering and refrigeration, (c) space heating, (d) industrial uses, (e) flueing and (f) the mechanical examination of appliances of all types.

Gas utilisation

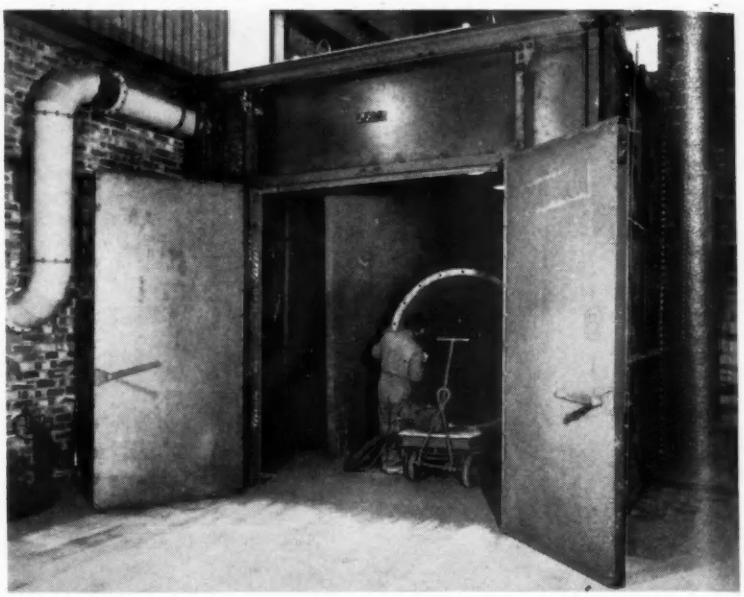
In the coke laboratory, coke burning appliances are tested for approval on behalf of the Gas Council and the Domestic Solid Fuel Appliance Approval Committee, and problems of the production of coke and its utilisation, particularly for domestic purposes are investigated.

The tar laboratory works closely in conjunction with the chemical products department on the utilisation of tar, particularly as a binding and water-proofing agent; this involves a study of the physical and chemical properties of tar and pitch and their modification. In addition a technical service is provided to the Board's tar customers.

The combustion laboratory now forms part of the general chemical laboratory and investigates the more fundamental problems of combustion including those factors which determine the performance of gas in appliance burners and which are normally covered by the term 'combustion characteristics'. This is of primary importance in view of the new methods of gas production now being used.

For heavy equipment

NEW PLANT HELPS PROTECTIVE COATING



The new automatic shot-blasting cabinet at West's-Loyne Ltd., Miles Platting, Manchester, specialists in the application of protective coatings on heavy equipment. The cabinet will accommodate work up to 30 ft.×12 ft.×12 ft.

A UNIQUE industrial service, the application of a comprehensive range of anti-corrosion and protective coatings to heavy equipment up to 5 tons in weight, under factory conditions, has been established in Manchester.

The new service is based on specialised plant recently installed at Norton Street, Miles Platting, Manchester, by West's-Loyne Ltd., a Company jointly formed by W.G.I. Ltd., (West's Group of Industries), engineers, of Manchester, and Loyne Ltd., protective coating specialists, of Ashton-under-Lyne.

The establishment of the service will be welcomed by many industries, e.g. chemicals, petroleum, food, textiles, brewing, because of the serious shortage of purpose-built plant designed for the specialised coating of large fabrications.

Limited range

Though some large manufacturers operate their own coating plants, the range of coatings applied is limited, and there is an increasing—and unsatisfied—demand from producers of all types of equipment for facilities for the application of protective coatings to items in the 1-ton to 5-ton categories.

This is the first time that such facilities, covering the widest possible range of coatings, have been made available under conditions where close control can be maintained throughout the process, from initial preparation to final curing.

Wider scope

In addition to meeting this demand, it seems likely, therefore, that the establishment of the new plant by West's-Loyne Ltd. will further widen the scope and use of the rapidly developing modern synthetics in the protection field.

The plant, which is adjacent to the main works of the West's Group, includes one of the largest fully-automatic shot-blasting cabinets installed in Britain for this kind of work and a large gas-fired oven for the sintering and stoving of coatings, or the heat treatment of metals.

The installation is complete with the most up-to-date preparation and coating equipment and the necessary cranes for the moving of large items while under treatment.

The new Company will operate in close collaboration with Loyne Ltd., an organisation whose wide experience in the coating field includes the application of a wide range of coatings to all types of equipment at their factory at Ashton-under-Lyne and site work on large and heavy fabrications in all parts of the country.

The service offered by West's-Loyne Ltd., like that of Loyne Ltd., includes technical advice in addition to surface preparation and application and curing of coatings.

Coatings applied

Among the coatings applied are: Epoxy resins (for the lining of vessels containing food, oil or chemicals); phenolics (water and acid resistant); synthetic rubber (abrasion resistance and corrosion prevention); P.T.F.E. (polytetrafluoroethylene—non-stick dispersion coatings for a variety of uses in industrial and domestic equipment); P.T.F.C.E. (polytrifluorchlorethylene—insulation and resistant to high temperatures and corrosive gases and acids). silicones (non-stick, heat and chemical resistant); metal spraying (zinc, aluminium, stainless steel); flame spraying (polythene, nylon, P.V.C.).

The gas-fired oven at the new plant is 30-ft. long, 12-ft. wide and 10-ft. high, and is designed for sintering P.T.F.E. and P.T.F.C.E. and for stoving high-bake epoxy, phenolic and silicone coatings.

A temperature of 450° can be attained when needed for heat treatment of metal if required before P.T.F.E. coating.

Provision is also made for curing coatings by hot air and infra-red heaters.

Other facilities

Other facilities available at the plant include the shot-blasting of very large vessels in the open with mineral grit and if required work can be prepared by flame cleaning and power wire brushing.

Both powder and wire metal spray guns are used for flame spraying zinc, aluminium and stainless steel as well as for the synthetic coatings.

Pipes and ducting can be internally coated by spray or flow coating. Other types of application are by spray, brush and trowel.

Since West's-Loyne Ltd. is associated with the West's Group it will draw upon the engineering experience of the Group Companies, which operate in a number of different fields, including gas engineering, the manufacture of special fabrications of all types, mechanical handling and coal preparation plant, foundations and civil engineering, structural engineering, automatic control systems, and refractory materials.

Yorkshire Juniors meet

At a meeting of the Yorkshire Junior Gas Association in Leeds, a paper on 'Modern Trends in Gas Purification' by Mr. J. J. Priestley and Mr. W. E. Bough, was read to nearly 50 members.

26th I.G.E. AUTUMN RESEARCH MEETING

Venting gas appliances

MR. T. T. WHITE: Investigations into shared flue systems during the past six years or so, reported in a series of papers from this platform have culminated in the adoption of two systems, the branched flue and SE-Duct in a number of blocks of flats. This paper gives an account of the field experiences with what are now tried and proven systems, and in this sense the objectives of the work described in the earlier papers have been achieved.

We have endeavoured to set out not only the experience gained in the construction and behaviour of the systems from the viewpoint of gas utilisation practice, but also the results of the field investigations into the functioning of the systems.

The results obtained over a period of three years with instrumented branched flue systems in occupied premises have confirmed that the incidence of downflow through the branches is insignificant. Details are set out in [Tables 1 and 2, on p. 4]. For the purpose of design, data is required on the diversity of usage of the appliances and such information has been obtained for gas fires. The net results are given in [Table 3].

Laboratory technique

Field experience has confirmed that for the branched flue system the terminal must not be located in a region where a high static pressure effect is produced by the wind. A practical laboratory technique using model buildings has been developed as described in [Appendix 2] which enables the efficacy of the termination in projected schemes to be assessed.

From the quantitative results obtained with instrumented SE-Ducts in occupied blocks described in [Section IV] the basic theory had been confirmed and it has been possible to develop the theory in [Appendices 4 and 5] to allow for the influence of extraneous effects—wind and building heat transfer. From this knowledge of the functioning of the system and the fundamental data obtained on the pattern of usage of the appliances, the design recommendations on [pp. 19 and 20] have been established.

The type of data obtained from instruments fitted to SE-Ducts in occupied blocks is shown by an extract from the records in the chart [Fig. 7]. The measurements included the CO_2 concentration of the duct air, the pattern of usage of instantaneous water heaters and drying cabinets and the flow velocity and temperature of the air in the horizontal and vertical ducts over a wide range of wind conditions and external air temperatures. Measurements of the pattern of usage of the appliance in two local authority blocks of flats have shown that the simultaneous usage of three out of ten instantaneous water heaters occurred on average for only .5 minutes per week. As illustrated by the chart, under calm conditions, at Gateshead there was a basic upward flow of some 4 ft. per second induced by a small heat transfer through the duct walls, but even under 50 m.p.h. wind conditions the duct air velocity rose only to approximately 9 ft. per second. This remarkable stability arises from the high degree of neutralisation of wind pressures at ground level brought about by opposite inlets to the system, the neutralisation of the effects of wind flows over the roof by the terminal and the inherent high flow resistance of a tall flue. Downflow in the duct occurred only instantaneously on few occasions. The calculated magnitudes of the energy contributions to the duct air inducing flow from the thermal sources are set out in [Table 25].

The information obtained has shown the system to be very tolerant and that the overload margin formerly adopted was excessively high. Smaller duct sizes are now acceptable, examples of which are set out in [Table 27]. Full tables covering sizes of SE-Ducts for installations of individual appliances and combinations of appliances for buildings of up to 30 storeys will be published within the next month or so in the True Flue booklet.

With a view to a possible simplification of the air inlet arrangements to the system, data have been obtained on the functioning in occupied blocks of systems having a single inlet. At present, such arrangements must be restricted to those cases where the shape and size of the building are not conducive to the development of an excessive pressure differential between the ends of the duct.

Inevitably teething troubles occurred with the first installations, but having regard to the nature of the undertaking these were remarkably few and have been resolved as described in [Section 5]. The cutting of holes in the ducts for appliance spigots was found difficult in a few of the earlier installations, but the use of power tools and the ability of the block manufacturers to preform holes with precision have overcome this problem. This section also gives guidance on the practical aspects at the planning and constructional stages.

Presentation and discussion of the paper 'Experiences with Branched flue and SE-Duct Systems for Venting Gas Appliances,' by W. J. BENNETT, and C. H. PURKIS, London Research Station, the Gas Council; and J. B. CARNE, and T. T. WHITE, Central Laboratories, South Eastern Gas Board

We would draw attention to the practically complete absence of condensation in the duct, the reduction of servicing of water heaters, the absence of noise transmission due to the presence of the SE-Duct, which are also dealt with in this section.

Many people both inside and outside the industry contributed in various ways to the acquiring of the information used in this paper, and we would like to express to these our sincere appreciation of their assistance.

Mr. W. K. Hutchison, Deputy Chairman of the Gas Council: It seems all too easy when viewing the exciting prospects offered by new advances in the technology of gas production to lose sight of problems which are likely to have even more immediate significance to the well-being of the gas industry and to its future growth and prosperity.

These are questions surrounding the release of the heat potential of gas. Starting from the highly complex physics and chemistry of the mechanism of flame being studied by Dr. Dixon Lewes at Leeds, we enter the important field of the combustion characteristics of gas. I need hardly stress how important it is to be able to measure these properties accurately when new processes of gas manufacture are being considered. Finally, there are the more practical aspects of the control of air for combustion, the disposal of air for combustion, the disposal of products, and the design of appliances to meet all the changing demands of industrial and domestic users.

Brilliant solution

The paper records a brilliant solution of one of the most urgent problems that has ever faced our industry and does great credit to all concerned. In view of all that is said from time to time, it is most satisfactory to find an all-British invention being accepted enthusiastically in many countries abroad.

As we now know only too well, new conceptions of architecture make no provision for the orthodox chimney system based as it was on the idea that almost every room would have some form of solid fuel appliance. Architects today are unwilling to provide more than one chimney in a house and have been reluctant to allow any chimneys at all in their new high blocks of flats. Everything pointed at one time to the virtual elimination of gas from the domestic heating services of the future just when we came to see that in this field lay our best hopes of expansion.

Looking back, I think we can see that for too long we had been content to base our research and development on ideas derived from the burning of solid fuel instead of treating the subject as an entirely new one to be solved in terms of the special properties of gas as a fuel.

The first significant advance was the development of a range of appliances based on the principle of the balanced flue—itself a relatively old concept. The elimination of the chimney was an end in itself, but an additional reward came from the increased efficiency that results from control of air injection that balanced flue operation allows. I sincerely hope that it will not be long before we receive reports of the solution of one major problem outstanding, that of a balanced flue source of radiant heat.

The special problem of the higher flats could not, however, be solved by these methods alone—for architects are very sensitive to any pattern created in their outside surfaces by even the relatively harmless terminal of a balanced flue—and we have now the record of a successful attack on this problem by two quite different methods.

The branched flue represents the outcome of development and improvement but it remains in principle a traditional chimney adapted to the special requirements of the structure in which it is built and the mainly traditional types of appliances which it serves. As such it seems likely to find its principal use in future in conjunction with solid fuel.

The SE-Duct on the other hand represents a complete break with tradition and shows how valuable it can be to forge ahead into the unknown, or rather into areas where the only knowledge is that gained from theoretical studies. It is very gratifying to observe how fully the observations on installations in operation have verified the theory underlying the design of the flue and the equipment that it serves. This should give the authors and all others concerned with the design of new installations confidence to plan boldly for the future whatever demands may be put on them by architects and housing authorities.

Mr. W. Sutcliffe, Northern Gas Board: Although the wealth of fundamental data contained in the paper will receive careful consideration by experts in their own field, the important fact, to me, arising from their work is contained in a small paragraph on [p. 2], which reads: 'In section VI, broad conclusions are drawn from the foregoing which may be summarised in the simple statement that theory and prediction have been fully confirmed in practice and some valuable practical lessons have been learned.'

In 1953, the Borough of Gateshead decided to install gas equipment for space heating, hot water and clothes drying, as well as for cooking and laundering, in four ten-storey blocks comprising 196 flats they were constructing at Barne Close. This installation was so successful that they decided to repeat it in their proposed ten-storey block of 160 flats at Regent Court. The architectural features of this block, however, varied in detail from those at Barne Close, and it soon became apparent that the normal balanced-flue system previousy adopted for the multi-point water heaters was not acceptable. By a fortunate combination of circumstances, the SE-Duct system was at that time in its final development stage, and offered an immediate solution to the problem. After careful consideration, the SE-Duct was accepted by the Corporation, and the design of the flats modified to allow it to be incorporated, a decision which called for considerable courage on the part of the Corporation's officials and the Housing Committee.

Courage justified

The results now published provide scientific evidence that their courage was justified, and that this is a source of considerable satisfaction to them, as it must be to the authors and others who have since adopted these systems.

It is encouraging to note that the authors are satisfied that single inlet ducts can be used in a large proportion of buildings and that the number of appliances fitted to each duct can be increased. This will in a large measure obviate the difficult problems which have been met in fitting in the horizontal ducts, will facilitate the internal planning of the building, and make the system even more acceptable from the æsthetic and financial standpoint.

The increased number of appliances available for use with the SE-Duct is welcomed, and we look forward in particular to the speedly fulfilment of the promise that a gas fire will be added to the list in the near future.

Mr. H. G. Hammond, Tate and Partners, Architects: The development of tall buildings of 12 or 20 storeys or even more leads to all sorts of new problems, one of which is the accumulation of flues in the centre of the building.

Both the branched flue and the SE-Duct have removed all embarrassment in the planning of flats within the very tight limits of floor area and costs which control housing, especially in tall blocks, that must be a source of satisfaction to all concerned.

The size of the SE-Duct in particular is an excellent solution to providing heat for space heating, for water heating and for clothes drying.

Skyline sensitivity

Tall buildings produce very noticeable skylines, and local authorities and architects are very sensitive to the skylines of buildings. The difficulty of keeping terminals out of sight or so placing them that they are inconspicuous or are æsthetically satisfying is perhaps the most serious consideration which the architect finds in using flues of this type. The SE-Duct is easier to accommodate in this respect as it is not so prone to down-draughts arising from buildings at roof level. It would be helpful if more data were available to architects on the precise positioning of terminals and what are the optimum positions for terminals to ducts in relation to parapet walls, roof buildings, and the like.

M. Paul Richalet (France): The company which I represent was formed about six months ago specifically for the utilisation of the SE-Duct and the use of appliances for connecting to it. The first block of flats that we put up with the use of this in France comprised 160 flats, ten storeys high.

I am in complete agreement with the authors as regards the section of the ducts, and we have proved to our satisfaction that these can be reduced by 30% to 40%. I am also in complete agreement with them as to the possibility of eliminating the horizontal duct in all cases where there is sufficient air at the base of the duct. On the other hand, I am convinced of the importance and indeed necessity of providing as much air as possible at the entrance to the duct so that the air can get to the duct and counterbalance any effects from down-pressure.

In the six months we have studied 20 large blocks where about 2,000 appliances have been installed. The last one that we have studied comprised 200 appliances.

French architects are extremely interested in the SE-Duct, especially in the placing of the duct in the middle of the building. Among other appliances which are especially suitable for use with the SE-Duct is the drying cabinet.

Mr. N. Barnes, Ascot Water Heaters Ltd.: The work involved in developing and proving the design of tall flues is such that it could not be expeditiously undertaken by manufacturers. It is therefore most important, and much appreciated, that the Gas Council should cover work of this nature. In some cases, such as branched flues, the problem may be solved with little impact on the appliances. In other cases, such as the SE-Duct, the appliance design is affected and the manufacturer can make a contribution to the development.

All developments involve a step into the unknown, and some must be taken outside the laboratories and subjected to practical operation before the design principles are fully understood. This is instanced by the four points quoted in the paper, namely, the effect of extrapolation, practical construction, weather conditions, and usage. If this problem is approached with undue temerity development stagnates, but in accepting the risks involved by more rapid development the manufacturers appreciate very much the responsibility shouldered by the Gas Council, which approves the appliances and vouches for the installation during the initial practical stage. This is well illustrated in the case of the SE-Duct, and also the previous related work on balanced-flue appliances. The willingness to have a go was demonstrated when our friends in France decided to erect their first SE-Duct installation, mentioning that it had to be adapted to natural gas. On this point I should like to say how pleased I am that M. Richalet is here today to join in our discussion.

Finally, what of the future? The work done so far will enable increasingly economic installations to be made, and further work is suggested. This will not merely permit installations of the current form to be further simplified, but will ensure the best foundation for further developments which will undoubtedly come, for instance on appliance design, duct construction and building layout.

M. R. Liard, France. I should like to take this opportunity of saying how greatly we are interested in France in branched flues and SE-Ducts. Branched flues have become in France an ordinary way of venting appliances, but with some restrictive conditions that this paper may help us to enlarge.

A certain number of blocks including SE-Ducts are under construction or are projected in France. In some cases, such blocks are occupied, as M. Richalet has said. In the North of France there is a project of 19 storeys which includes six ducts. The construction of SE-Duct now requires a special waiving of the regulations which the public authorities give only for experimental purposes. This will be the case until there are sufficient results available. I am sure that the present paper and discussion will be helpful in that respect.

For demonstrations

The experimental installation was built at the Research Centre of Gaz de France and is also used for demonstration purposes. Observation at the installations on the district has just started and only a few results are as yet available.

We are receiving more and more inquiries about SE-Duct, and many architects are interested in it. There is no doubt that the work of the South Eastern Gas Board's laboratory is bringing a very valuable development to the use of gas appliances not only in Britain but in France and in many other countries.

Mr. L. F. Daws, Building Research Station: It is very clear that to a large extent they have shown that these complex processes behave in practice as prediction told.

This is technically true of the SE-Duct system, where wind effects have been largely eliminated and the performance of the system therefore appears to be more under control of the design than is the branched-flue system, except possibly for the acoustical effects that the authors mention on [p. 20].

In the case of branched flues, the authors say on [p. 4] that these must be treated statistically from the design point of view and an economic choice made. I am a little wary of the design value that they have chosen for updraught appliances, particularly at the top of the system of .005 in. w.g.

The authors state on [pp. 9 and 10] very clearly the stability criterion for appliances, and this aspect also seems to me should be taken into account in appliances at the top of the branched flues. I would like to have the authors' views on this. Later in the paper, they say that so far as they can see at the moment it may be unnecessary to redesign appliances for branched flues, that is to say, to vary their restriction with height, but I feel that the value of .005 in. w.g. tends to suggest that the pressure losses in the rest of the circuit are of the same order, and for this reason the system is unstable. Perhaps it might be worth while using smaller sized subsidiary ducts at the top of the system. This would have the effect of increasing the thermal resistance and so raising the driving force in that part of the circuit, and at the same time one would be able to increase the resistance of the appliances at this height to give the same performance. In this way one might be able to get a more stable situation.

Natural gas exploration and development in Israel

WITH the recent discovery of natural gas in Israel further exploration and development work is being carried out in the Zohar field in the northern Negev where a number of gas producing wells have been sunk.

The discovery of gas in Israel was first made in 1958 at the Zohar No. 1 well but it was not until after the drilling and testing of Zohar No. 4 well in 1959 that the finding of a gas field was declared. Based on tentative reserve estimates and production costs from the three gas bearing zones, it is believed that a production of 8/9,000 mill. cu.ft. could be sustained for a period of from ten to 15 years.

A feature of the Zohar field is that the gas is being produced from a relatively small Jurassic limestone structure at a depth of around 1,120 m. Previously, exploration had been directed mainly to the larger structural features, but the recent find has now considerably altered this older approach and emphasis has now been shifted to the gas and oil possibilities of the smaller features. To this effect, a number of wells were planned for 1960 to test the smaller structures of the northern Negev.

In 1959, the shallow gas possibilities in the southern Coastal Plain were re-examined. Methane was encountered in numerous drillings while penetrating the formations of the Neogene age. Lack of suitable reservoir conditions within these strata has, however, precluded commercial production to date. Three additional wells were drilled in the Beeri area to trace the lateral extent of the gas bearing zone as discovered in Beeri Sh.6. These met with no success.

In 1960, activity has included active development in the Zohar gas field and the testing of many of the smaller structures for gas in the northern Negev—Kidod, Juraba, Shereif, Boqer—and a continued search for shallow gas in the Coastal Plain—Ramle, Yavneh, Ashkelon.

It is intended to construct a pipeline for transporting the gas produced in the Zohar field to the Dead Sea works.

Some £12 million has so far been spent in oil and gas exploration and development in Israel.

Worthy West Midlands Winner

In the West Midlands Area Final of the 'Master Therm and Miss Therm' competition, imagination added just that little extra to place Miss Barbara Workman, of Birmingham, first among the 12 girls competing. Miss Workman is a 16-year-old Jamaican and hopes to become a domestic science teacher. She is seen (left) with Mrs. W. R. Branson, the wife of the Deputy Chairman of the West Midlands Gas Board.

As the judges said, from the ingredients provided—egg, bacon, tomato and toast—the competitors were not bound to cook an egg and bacon breakfast. Miss Workman stepped out of the rut by making a bacon omelette with tomatoes.

She will represent the West Midlands in the national final in January with Mr. A. P. Gould of Shrewsbury, who won the boys' section of the competition.

Parkinson Cowan open factory in Canada

THE production plant of the newly-formed company, Parkinson Cowan (Canada) Ltd. has been opened by the Mayor of Chatham, Ontario. This factory, the first to be opened by Parkinson Cowan in Canada, occupies a five-acre site and will initially employ only a small labour force.

The number of staff will build up gradually over the next five years until production has diversified and extended to include many of the wide range of products made by the firm in the U.K.

A MESSAGE

The Chairman of Parkinson Cowan, Mr. Hugh P. Barker, was unable to attend the factory opening personally, but he sent a recorded message in which he expressed the strong conviction that Canada would soon become 'the economic centre of the Commonwealth.'

A Canadian, Mr. Denis Bach, is General Manager of the new factory.

OLD WITH NEW

After commenting on the fact that Parkinson Cowan are the U.K.'s largest exporters of gas meters, Mr. Bach said:

'Here in Chatham we intend to merge the best of the old with the best of the new—the old tradition for high quality and the benefits of technological advances in new materials and manufacturing techniques.

'I only wish that all the Canadian gas industry representatives who were kind enough to attend our official opening today could have accompanied me on my recent tour of the P. C. factories in England. I wish they could have seen the excellent research and development laboratories where the Company's new products are born.

WIDE RANGE

'A superbly-equipped laboratory—designed specifically for testing new gas meter diaphragm materials—was opened earlier this year in Great Harwood, England.

'In this laboratory, the largest of its kind in Britain, penetrating investigations are in progress into a wide range of modern synthetic materials.

'Many of the results that our new laboratory produces will be of particular benefit to the Canadian gas industry and Canadian gas users.

'This kind of research and development is going on all the time. It inspires me with tremendous confidence to think that all the Parkinson Cowan products that will eventually be marketed across Canada are backed by such a thorough testing at the research stage that the need for subsequent field trials is virtually eliminated.'

Gas warmth at Royal wedding

COMMENTING that there were few other signs of pre-wedding warmth in the Belgian capital on the night before the recent Royal Wedding, Vincent Mulchrone told Daily Mail readers that gas heaters were blazing in Brussels' 13th century church of St. Gudule, where the last of the bachelor kings was married to Dona Fabiola de Mora oy Aragon.

The Mayor of Chatham, Ontario, Mr. Garnet Newkirk, opens the first Parkinson Cowan factory in Canada. Left to right: Mr. Denis Bach, General Manager; Mrs. Bach; Mr. D. A. McIntosh, President of Parkinson Cowan (Canada) Ltd.; Mr. N. D. Moffat, a Director; Mr. E. J. Spurrier, Director and General Manager of Parkinson Cowan Gas Meters, and Mr. S. Rogers.

NEWS SUPPLEMENT

FOUR BOARDS SPONSOR GAS HOME HEAT EXHIBITION

BECAUSE of the widespread interest in better heating a 'Comfort in the Home' Exhibition will be held next February.

Sponsored by the Eastern, North Thames, South Eastern and Southern Gas Boards, it is the first exhibition of its kind which will bring under one roof all aspects of domestic heating by gas.

It will be held at the Royal Horticultural Hall, London, S.W.1 from February 7 to 18 and will show a wide range of working models built into furnished rooms and flats.

MODERN SYSTEMS

All the modern systems and techniques the gas industry has to offer in home heating and a combined heating and hot water system will be in operation. The latest advances in automatic controls, flues, insulation, etc., will be shown.

The exhibition is specially designed for the information of architects, builders, estate developers, heating engineers and members and officials of local authorities, but will also be open to interested members of the public.

For those who want details of the running costs and installation of the systems and appliances, technical staff will be on hand at a special information stand.

SE-DUCT IN SCOTLAND

VISITS by interested local authorities to the SE-Duct warm air flats at Nitshill, Glasgow—Scotland's first—are already bearing fruit.

Aberdeen Corporation are building two schemes at Auchinyell and Kaimhill with selective heating by gas. Expected to be ready at the beginning of 1960, the two ventures are being regarded as a pilot scheme, which if successful, will lead the Council to include SE-Duct central heating in a further two housing schemes.

The Stoke on Trent and Newcastle (West Midlands Gas Board) cricket club held its annual social evening in Stoke on Trent recently. During the evening merit cups for individual performances and inter-divisional competition cups were presented.

Five tons of equipment for hydraulic systems designed by Humphreys & Glasgow, Ltd., the international contracting engineers, for Tokyo gas works, has been flown to Japan from Speke, Liverpool. Here, the consignment is being loaded at the airport.

GAS PLANT IS FLOWN TO JAPAN

ESSENTIAL equipment for the Japanese gas industry, ordered by the Tokyo Gas Company from Humphreys and Glasgow, Ltd., the British and international contracting engineers, has been the subject of a large scale air freight operation taking place over four months.

The tenth consignment necessitated the charter of a complete aircraft. This consignment was flown out of Speke on Saturday morning, December 3, for Tokyo and the weight involved was five tons. Altogether to date 20 tons of equipment have been flown to Japan.

Hydraulic equipment

It is hydraulic equipment, including control valves, pumps, cylinders and accumulators, manufactured for Humphreys & Glasgow by Lockhead Precision Products Ltd., of Speke Trading Estate, Liverpool.

The hydraulic systems for three Tokyo oil gas plants have been designed by Humphreys & Glasgow. The plants produce town gas for the city of Tokyo.

INDUSTRIAL LOAD GROWS STEADILY IN SOUTH-WEST

THE industrial gas load in the South Western Area, which covers 8,250 square miles with an average population density of 376 per square mile, has shown a steady increase during the last ten years.

Approximately 90% of the industrial activity is concentrated within a radius of 50 miles from Bristol and industrial gas sales, which now represent 17½% of the total, are 52% higher than in 1951, said Mr. K. G. Eccleshare, Senior Industrial Gas Engineer, South Western Gas Board, in the course of a paper on 'Recent Industrial Gas Developments in the South West', which he gave with Mr. C. H. Hirst at a general meeting of the South-Western Section, I.G.E., at Bristol.

Eight centres

The area is covered by an industrial gas sales organisation with a staff dispersed in eight centres. The Area Industrial Engineer is based in Bristol and a Technical Test Engineer is available to carry out fuel surveys and tests in any part of the area.

An area industrial showroom displays representative items of equipment and provides facilities for development of special equipment on a limited scale.

Aircraft firms

Approximately 10% of the industrial gas load is taken by the various aircraft firms in the area and it is in this field that development of new techniques has been most noticeable.

Sixty members and guests attended the meeting, which was followed by luncheon and a visit to Bristol Siddeley Engines Ltd., at Filton.

The chairman of the Section, Mr. T. W. Jackson, welcomed the guests.

PERSONAL NOTES

The Minister of Power has made the following re-appointments to gas boards:

East Midlands: MR. R. S. JOHNSON, M.B.E., Chairman.

Eastern: MR. A. S. H. DICKER, M.B.E., Norwich, part-time member.

South Eastern: MR. F. J. STRATTON, C.B.E., Arundel, Sussex, part-time member.

Northern: Professor G. H. J. DAYSH, Newcastle - upon - Tyne, part - time member.

MR. J. P. V. WOOLLAM, has been appointed Deputy Chairman of Simon-Carves Ltd. Mr. Woollam joined Simon-Carves in 1916 and was appointed a director in 1945 and a joint managing director in 1953.

MISS DIANA EDWARDS, Home Service Adviser to Parkinson Cowan Ltd., has been admitted to hospital with spinal trouble. It is expected that it will be some time before Miss Edwards is able to resume her normal duties.

COMING EVENTS

January 5.—EAST MIDLANDS G.C.C.: Nottingham Chamber of Commerce, Smithy Row, Nottingham. 11 a.m.

January 6.—LONDON AND SOUTHERN JUNIORS: 'Fluid Couplings,' by P. A. W. Styles, 'Planning Small Holder Stations to Reduce Operational and Maintenance Costs to a Minimum,' by R. G. Langford, and 'Rapid Response Flame Protection,' by N. D. B. Harris.

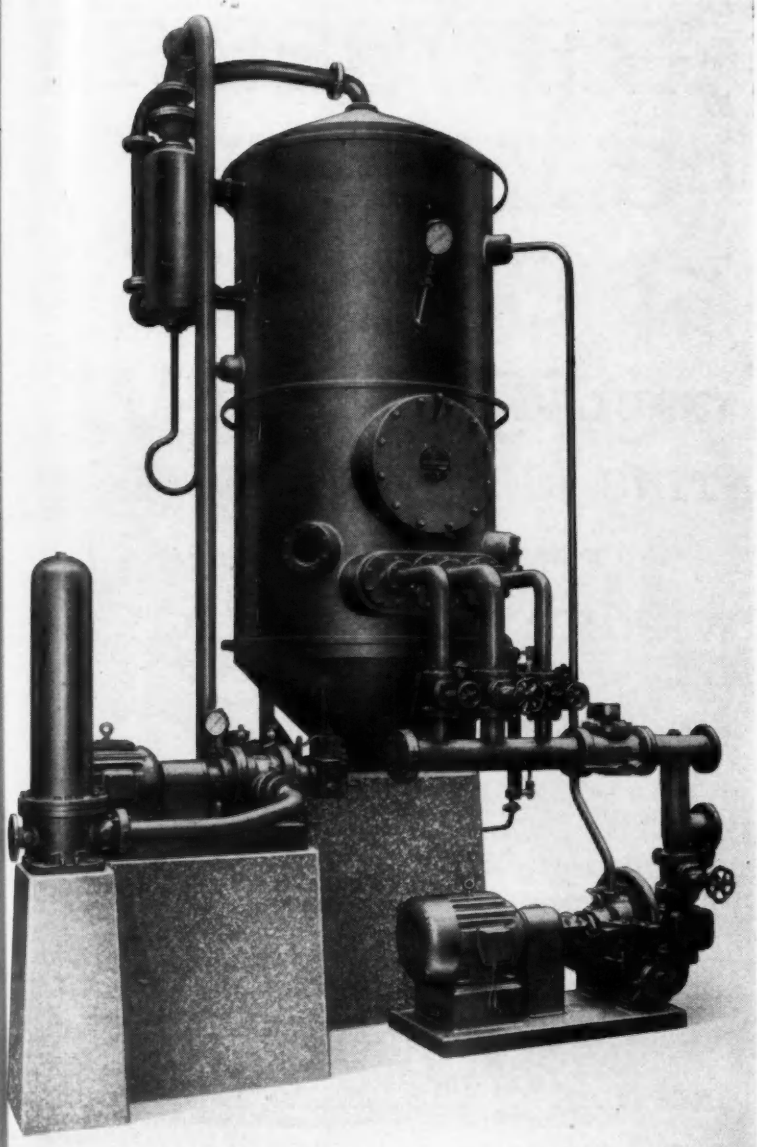
January 7.—EAST OF SCOTLAND JUNIORS: Dundee. Short Paper Day.

January 9.—WALES AND MONMOUTHSHIRE JUNIORS, SOUTH WALES SECTION: Newport. Joint Meeting with Sales and Service Association, South East Section. Address by A. Facer on 'Management and Administration for Sales Results.'

January 10.—LONDON AND SOUTHERN JUNIORS: Visit to The London Electric Wire Co. Ltd., Leytonstone.

January 10.—MIDLAND JUNIORS: Staff Mess Room, West Midland Gas Board, Birmingham District, Council House, Birmingham. 'The Quest for Simpler Mechanical Maintenance in Gas Works,' by R. L. Tarratt.

January 11.—WALES AND MONMOUTHSHIRE JUNIORS, NORTH WALES SECTION: Point of Ayr. 'Grid Supplies in North Wales,' by Mr. Barker.



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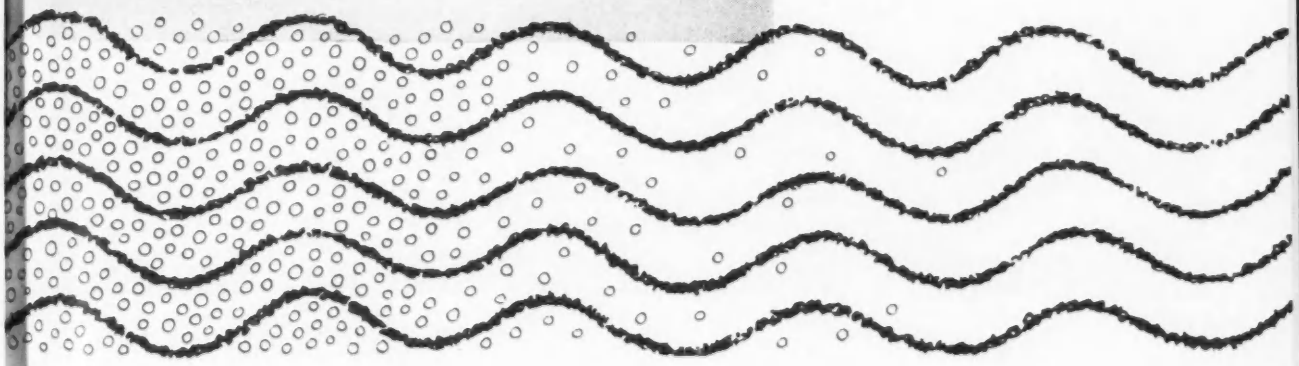
The recirculating deaerator developed by Hick Hargreaves provides a simple and dependable means of preventing corrosion by reducing the oxygen content of the feed water. Effective deaeration is assured under all conditions of flow, no matter how wide or rapid the fluctuations in the feed rate, whilst the absence of floats and spray valves ensures great reliability. Three types are available. The Straight Spray Type is suitable for handling feed water from 130° F. (55° C.) to 200° F. (95° C.) and requires no heating steam for its operation. The Direct Contact Heating Deaerator accomplishes the dual purpose of deaerating and heating cold water up to a maximum outlet temperature of 180° F. (82° C.).

The pressure type deaerator is capable of operation with outlet temperatures up to 240° F. (115° C.).

Standard designs for all types are available with capacities from 20,000 lb./hour (10,000 kgs./hour) to 450,000 lb./hour (200,000 kgs./hour).

The photograph shows a Spray Type Deaerator for 100,000 lb./hr. fitted with Hick Hargreaves Rotary Vacuum Pump.



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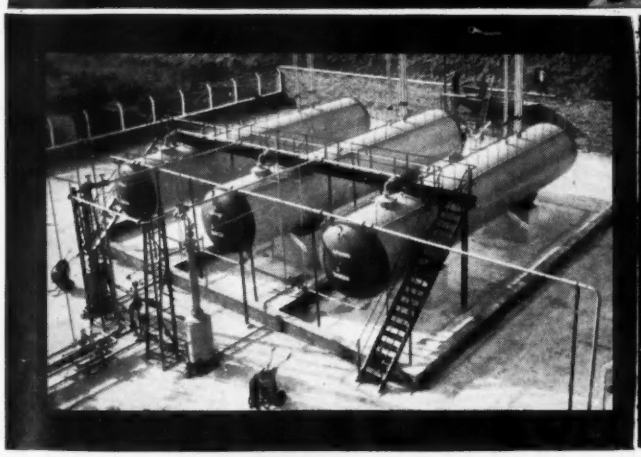

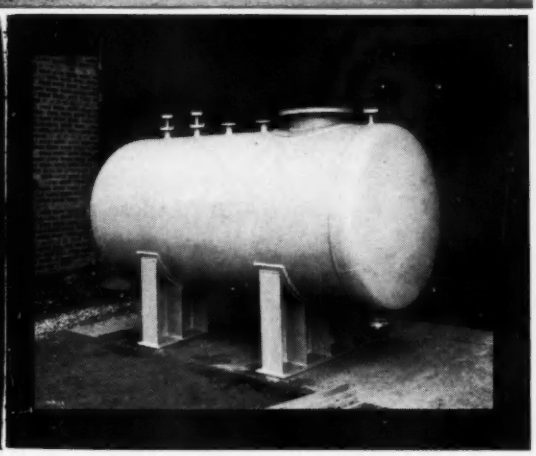

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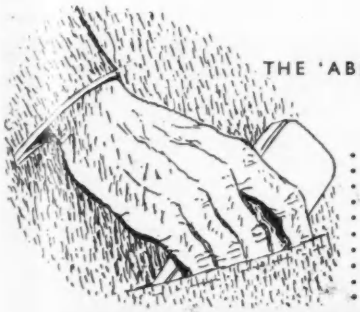
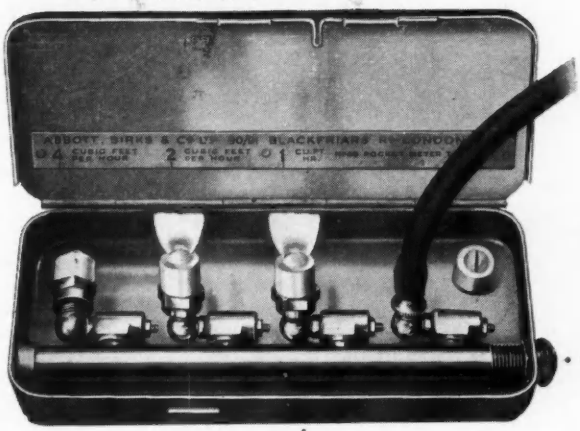


THE 'ABBIRKO'

Pocket Meter Tester

FOR DETECTING (IN SITU) THE PASSAGE OF UNREGISTERED GAS AT LOW CONSUMPTION



Now that nearly every home has either a refrigerator or a heater with pilot light, unregistered gas can be an important source of lost revenue. This handy instrument permits the quick routine inspection of meters *in situ* to ensure that they are registering at low consumption.

With its three governed burners, meters can be checked at consumptions of 1, 2, 3, 4, 5, 6, and 7 cu. ft./hr.—a range to cover meters from the small domestic to the large industrial type.

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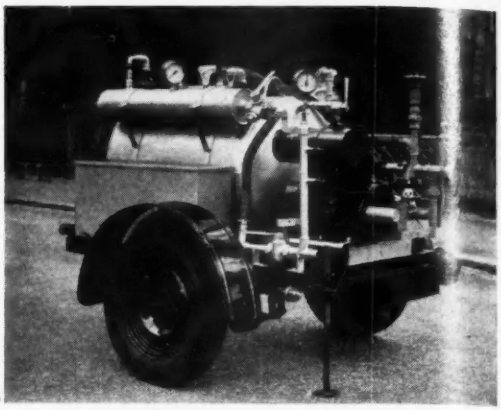
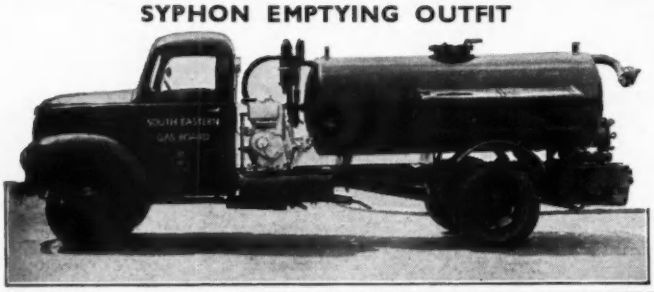
ALLAN TAYLOR SERVICE PIPE CLEANING OUTFIT

The 75-gallon vacuum and pressure trailer model Service Pipe Cleaning Outfit (*right*) is now fitted with the "PRESS-VAC" Assembly and cyclone and test-bar assembly. The "PRESS-VAC" assembly enables the operator to apply vacuum or pressure alternatively to the service pipe. This operation "rocks" the obstruction and assists in clearing the stoppage. The "PRESS-VAC" tank is pressurised by the exhauster from the main tank. This permits gas to be used for this pressure operation, thus avoiding the hazard of air entering the main. The cyclone and test-bar assembly enables the operator to make pressure tests before and after cleaning the service pipe, the test taps passing 50 cu. ft. or 100 cu. ft. as required. By using the cyclone the dust drawn from the service pipe is deposited in the sight glass for inspection and then into the easily removable container below. This enables the operator to determine the extent of the cleaning and prevents the greater part of the dust from entering the main tank. The "PRESS-VAC" assembly can be fitted to all existing service cleaning outfits.



SYPHON EMPTYING OUTFIT



The Vacuum Syphon Emptying Outfit (*left*) is mounted on a 4 ton **Thames** Chassis. A 600 gallon galvanised tank is fitted. A rotary type exhauster is driven by a 4 b.h.p. four-stroke air cooled engine, mounted on a sub-frame behind the cab. The tank is fitted with a flame-proof vent and the outfit can be used for high or low pressure syphon emptying. A large manhole at the rear allows the tank to be cleaned easily. A sight glass is fitted to enable the operator to know when the Syphon is emptied. Twenty-five feet of 1½ in. suction hose is supplied with the outfit. The outfit can be used for vacuum or pressure working.

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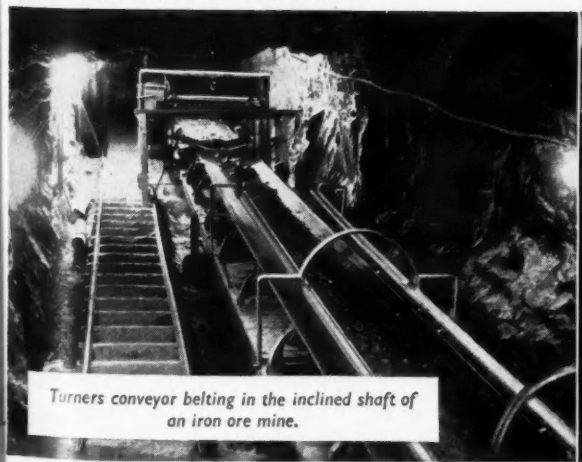
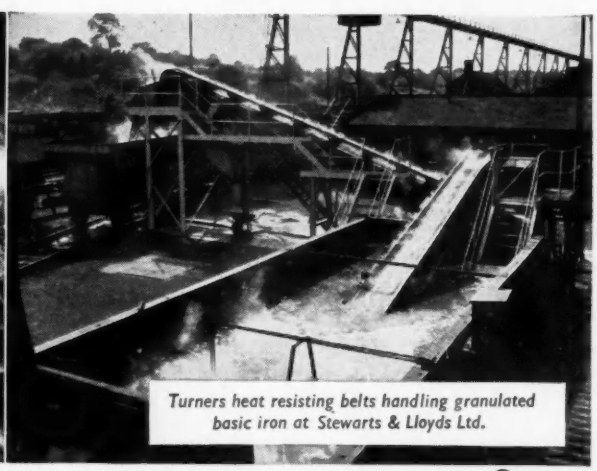


Turners conveyor belting in the inclined shaft of an iron ore mine.



Turners heat resisting belts handling granulated basic iron at Stewarts & Lloyds Ltd.

TA 236

As from December 1st all domestic gas-fired boilers at present in the KAYENCO range will be marketed under the brand name AGA

We have decided on this change in order that both Gas Boards and Allied Ironfounders may derive the fullest benefit from the present, very great, demand for all Aga products. This demand, though accelerated by current advertising, is based firmly on the long-standing reputation of 'Aga' as the most trusted name in home heating. The new range of Aga gas-fired boilers will, we are sure, enhance this reputation. In addition to all the existing 'Kayenco' boilers, the Aga gas-fired boiler range will include several completely new models. We introduce the first of these on the opposite page.

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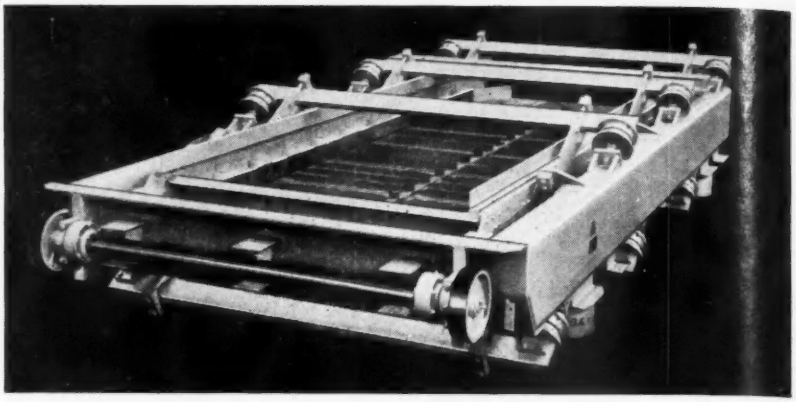

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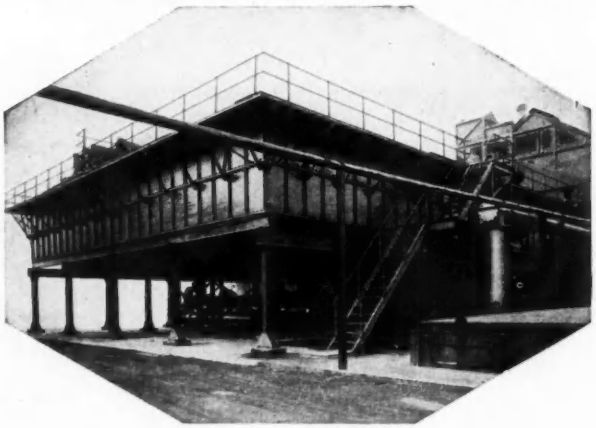

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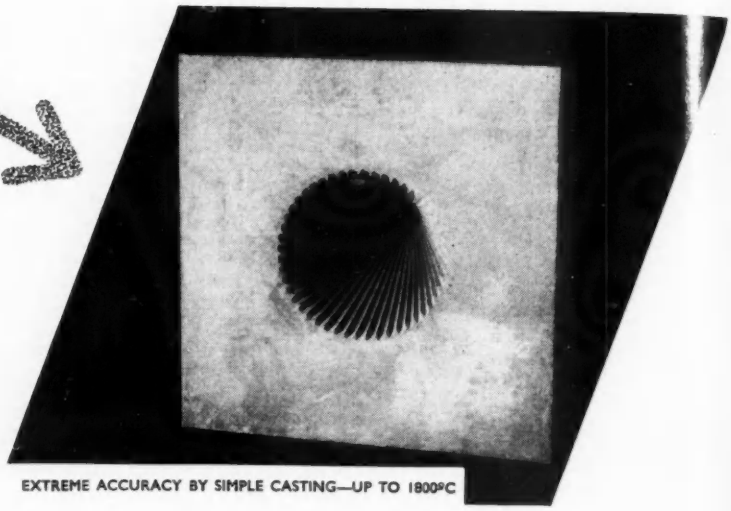

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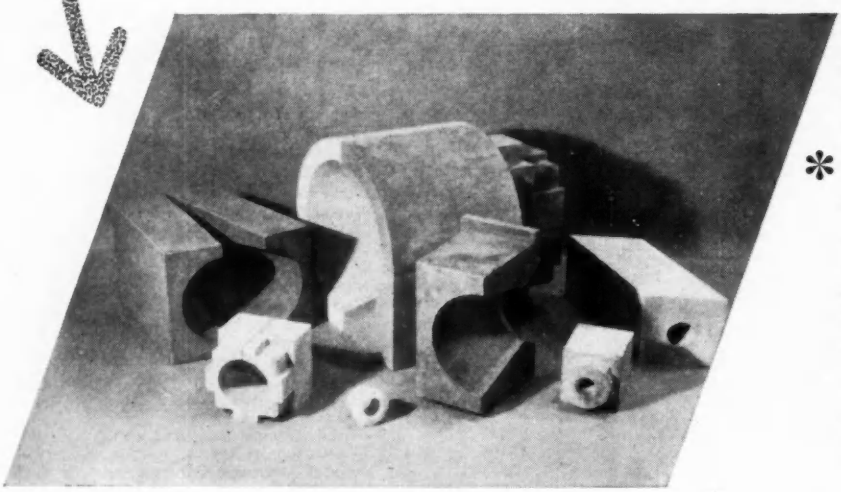

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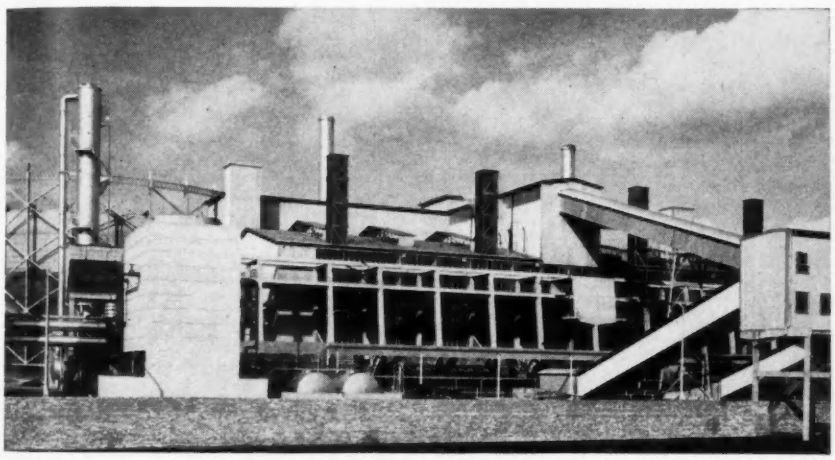

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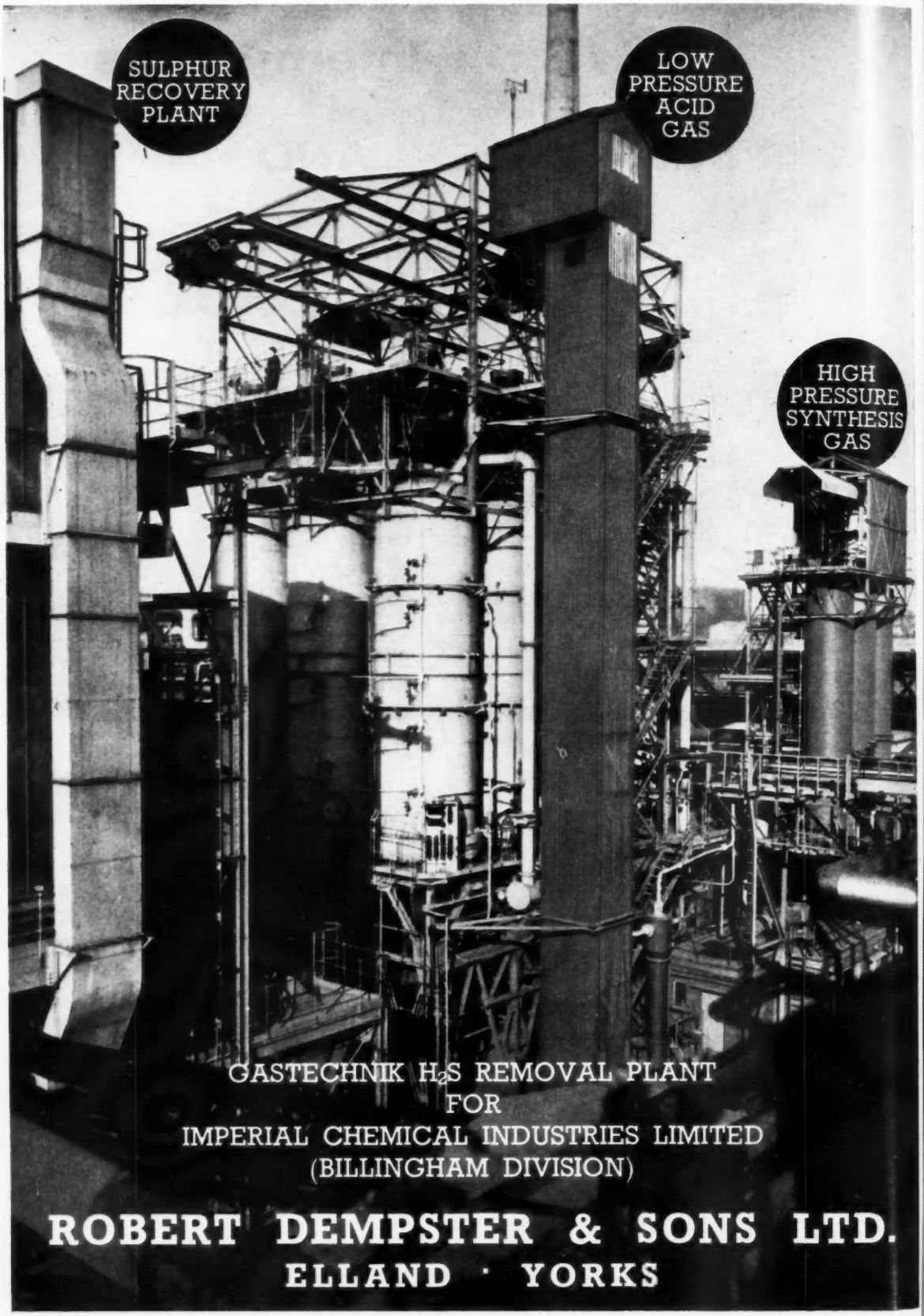
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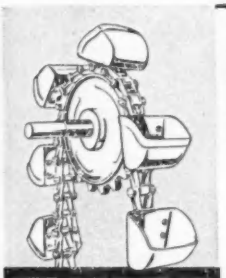

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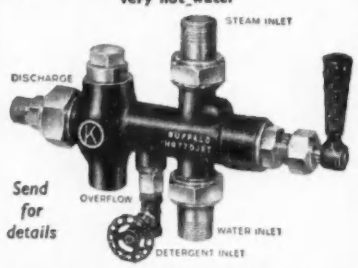

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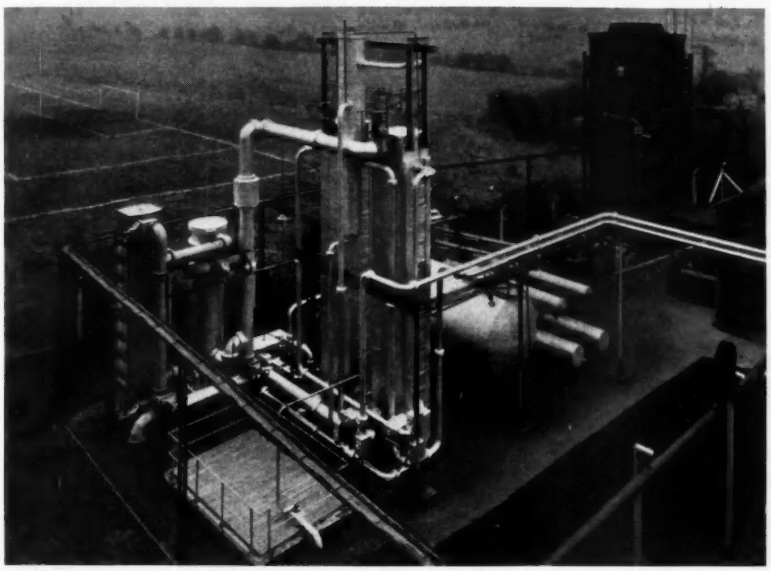

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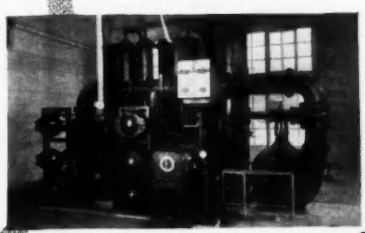

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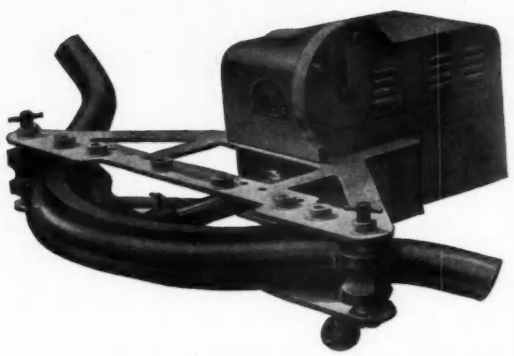

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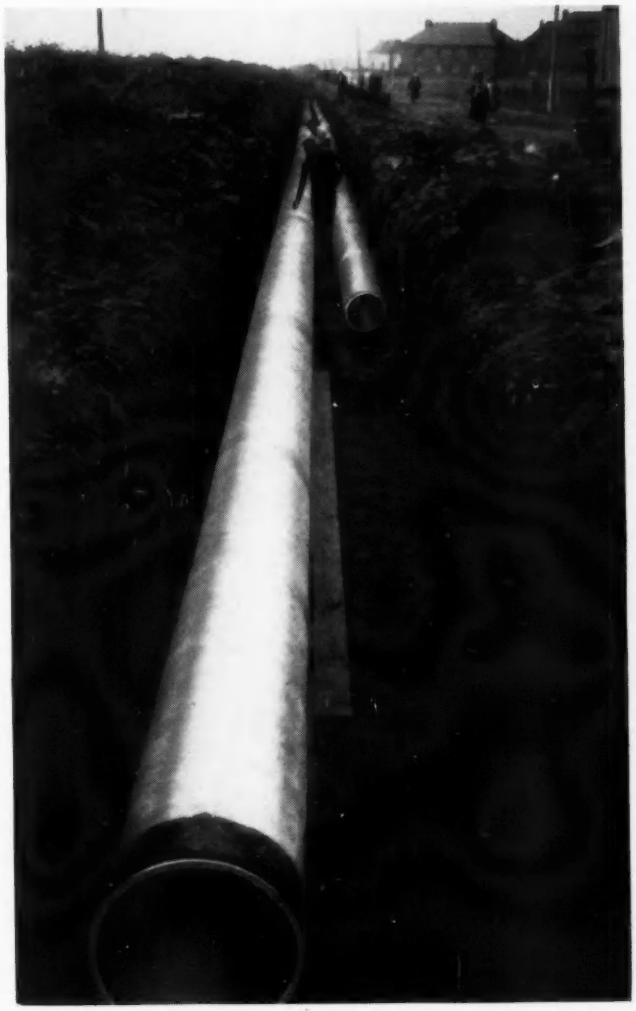

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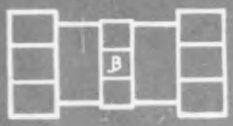

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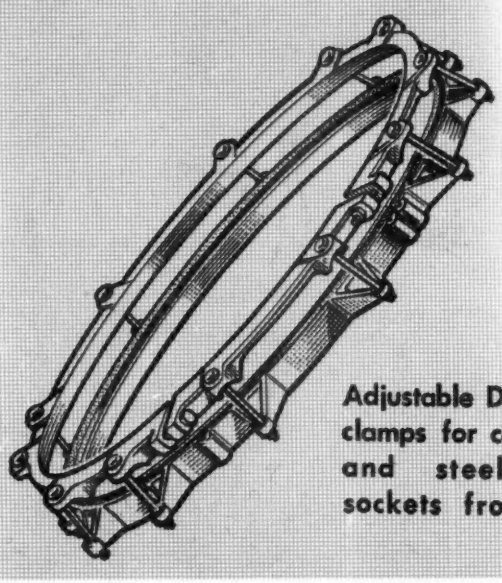

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